

Sample Grade 5 Unit—Angles

Unit Introduction

In this unit, students:

- ➡ Identify angles as acute, obtuse, right, or straight.
- ➡ Identify benchmark degree measurements of angles (45° , 90° , and 180°).
- ➡ Measure and draw angles to the nearest 5 degrees.
- ➡ Draw a geometric figure using angle measurements.

Assessment

A unit test in multiple-choice format is provided on page Assessment • 7.

KWL



Use a KWL chart to activate prior knowledge and set learning goals as a class. A reproducible KWL chart is provided on page BLM • 23.

Games for Practice and Review

Use the MeasureWorks Game Board to reinforce learning. Game rules begin on page BLM • 29.

Have students keep the KWL chart in their math folders and add to it as they work through this unit.

Focus on Vocabulary

acute angle (p. T-1)
angle (p. T-1)
degrees (p. T-1)

GeoTool compass (p. T-3)
obtuse angle (p. T-1)
rays (p. T-3)

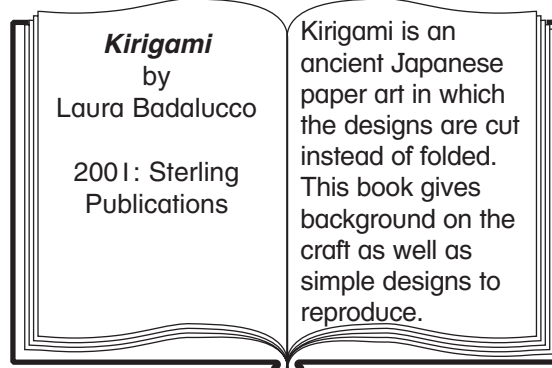
right angle (p. T-1)
straight angle (p. T-1)
vertex (p. T-3)

Write the names of the types of angles on index cards. Ask volunteers to find examples of each type in the classroom. Tape the appropriate labels to the angles.

Heads Up!

To help students who are confused by the idea that a straight line has an angle measurement, show students a protractor and explain that the straight line on the bottom measures 180 degrees, or half a circle. You can reinforce the idea by drawing a circle, bisecting it, and showing that the entire circle has 360 degrees.

Book Nook



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Measure Angles

Objective

Measure and construct angles to 5 degrees.

Materials

- GeoTool compasses
- Measurement Master 20
- Overhead transparency
- Blank paper



Grouping

Whole class, then pairs

Open It Up

Draw a circle to represent a pizza cut into eight slices.

Say: Do you ever think when you eat a slice of pizza that you've just eaten an angle? Every slice of that pizza has an angle at its center.

Have students draw a piece of pizza that they would like to eat and estimate its angle. Remind them to think of benchmark angles.

Demonstrate & Discuss

Say: The center of an angle, where the two sides meet, is called the **vertex**. The two sides are called **rays**.

Show students a **GeoTool compass** and explain that it is a tool used to measure angles.

Draw an acute angle on an overhead transparency. Demonstrate how to use a GeoTool compass to measure the angle.

Say: If I align the center point of the GeoTool compass with the vertex of the angle and then rotate the disk so that the 0° aligns with the lower ray, the other ray will point to the degree measurement of the angle.

Draw several more angles on the overhead transparency and ask volunteers to measure them with their GeoTool compasses. Then ask students to draw an angle of any size on a sheet of blank paper and measure it.

Planning Your Time

Intro & Demo

5 min



Activity

15 min



Sum It Up

5 min



Student Activity

Prepare ahead: Each student will need a GeoTool compass, a sheet of blank paper, and a copy of Measurement Master 20.

Note: You may wish to copy Measurement Master 20 on tagboard or heavy paper to make the angles easier to trace.

Students first work individually, and then in pairs. Students cut out angles within the circle on Measurement Master 20. Then they reassemble angles on the worksheet to form a larger angle, and trace the outline of the angle on their worksheet. Students make four more angles in the same way and trace them on a blank sheet of paper.

Then students exchange papers, measure the angles, and write the measurement and type of angle underneath the angles. If time allows, students check each other's work.

Informal Assessment

As students work, make sure they know how to measure angles with a GeoTool compass.

Ask: How do you know you are creating an obtuse angle? [Sample: It is greater than 90° and less than 180° .] / DESCRIBE /

Sum It Up

Say: Today we learned how to construct different kinds of angles and how to measure them.

Ask: What kinds of angles did you make? [Samples: right, obtuse, acute, and straight] / APPLY /

What were the measurements of the angles you made? [Answers will vary.] / APPLY /

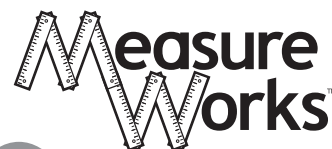
Book Nook

Kirigami by Laura Badalucco (Sterling Publications, 2001)

Kirigami is an ancient Japanese paper art where the designs are cut instead of folded (although folding is often involved as well). This book gives background on the craft as well as simple designs to reproduce. Add angle interest by having students measure the angles in their kirigami designs.

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Name _____

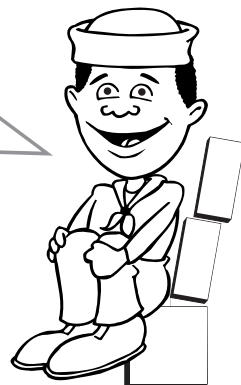




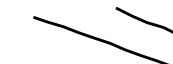

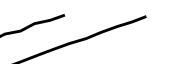



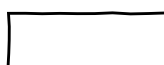

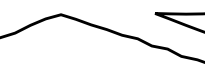

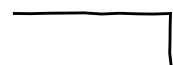
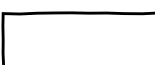
Follow the Angle

Try This

- Put pieces of the circle together to make a straight, obtuse, acute, or right angle.
- Outline the angle you make in the box below.
- Repeat for four more angles on another sheet of paper.
- Exchange papers with a friend. Measure the angles on your friend's paper with a GeoTool compass. Write the measurement and type of angle underneath each angle.

Hold the circle on the GeoTool compass in place while you move the ruler.



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Follow the Angle

